

## Software Development Kit for SAMSUNG Microcontroller

Seminix is total solution provider for Samsung Electronics' micro-controller as an authorized third party tool supplier, and provides a complete line of development tools (SDK) for Samsung's micro-controllers such as In-circuit emulator for 4/8-bit and 32-bit ARM processor, and single or gang programmers for Samsung OTP/MTP/FLASH micro-controllers. In addition, various adapter sockets for OTP/MTP/FLASH programmers are available for customers' demands.



### SMART KIT (SK-1200) In-circuit emulator for Samsung SAM8

Smart Kit (SK-1200) is a cost effective and full features emulator for Samsung SAM8 microcontroller with a windows-based complete system including Timer run, Real-time trace run, RAM data breakpoint run, Real-time RAM display, and OTP/MTP programmer functions.



### ARM-ICE (SK-3200) In-circuit emulator for ARM processor

The Smart Kit, SK-3200, is a JTAG-based debug system which is developed as low-cost solution of In-Circuit Emulator (ICE) for ARM7, ARM9, ARM10 families and Intel X-Scale Embedded processors. SK-3200 can operate with ARM eXtended Debugger (AXD) and ARM Debugger for Windows (ADW).



### GW-PRO2 Gang programmer for Samsung OTP/MTP/Flash MCU

GW-PRO2 is a stand-alone 8-device gang programmer for mass production line needed to writing Samsung OTP, MTP, and Full-Flash microcontrollers of SAM4 (S3C7xxx), SAM8 (S3C8xxx, S3C9xxx), Calm RISC (S3FBxxx, S3FKxxx) and ARM7 (S3F4xxx, S3F3xxx). The gang socket adapters are sold separately.



### SPW-uni Universal programmer (Samsung OTP/MTP/Flash MCU)

SPW-uni is a high-speed single socket universal programmer for the Samsung MCU, NOR-Flash, NAND-Flash memory, and other companies' MCU. It can program one device at a time. The single socket adapters are sold separately.



### AS-pro On-board programmer for Samsung MTP/Flash MCU

AS-pro is a high-speed programmer for the Samsung MTP (Flash memory MCU) devices on boards and developed as small size for portability. It can program a new firmware code into Samsung MTP MCU mounted on system PCB when you need to upgrade the system firmware code for after-sales service without a host PC.



### US-pro Portable programmer for Samsung OTP/MTP/Flash MCU

The US-pro is a high-speed single programmer for the Samsung OTP and MTP (Flash memory MCU) devices on board and was developed as very small size and light for portability. It can program one device at a time OTP or MTP connection with the USB interface of notebook PC. (No stand-alone programmer)

# SK-1200 Samsung 8-bit MCU In-circuit Emulator



*Smart Kit, SK-1200, is a new product which is developed as the USB interface model of In-Circuit Emulator (ICE) for SAM8 (S3C8xxx/ S3C9xxx) families of microcontrollers and also supports the full flash type MCU. SK-1200 is the upgraded model from the existing Emulators by adding the dual (USB or RS232) interface to PC, Real-time RAM break, and Real-time RAM display functions in IAR C- compiler & Debugger environment.*

*The debugger software, Smart Studio, runs under Microsoft Window 98/2000/XP environment, providing a user-friendly operating environment with an easy-to-use toolbar, function/hot key and full context-sensitive help. Also it allows the user access to a wide range of supporting software accessories including fully compatible with Samsung SASM universal assembler.*

## Hardware Specifications

- Full capacity emulation memory, SAM8: 64K byte
- 16K (16 bits wide) depth of real-time trace memory
- USB or RS232C interface with PC host system
- Programmable VDD voltage of Target CPU
  - Supply voltage to Target board: 3.0~5.0V
- Real time emulation with processor full speed
  - SAM8: 25MHz (SAM8 full speed: 25Mhz)

## Emulation Features

- Download/Upload and emulation memory editing function
- Run/Stop, Reset, Go to cursor, Go to address, Breakpoint run
- Program execution skip
  - Skip to cursor, Skip to specific address,
  - Step over subroutine calls
- All registers can be displayed and modified by user
- Single-step execution
  - As the user single-step execution, all updated information is highlighted for easy reference
  - Execution by single step
  - Continuous single-step execution
  - Up to 255 countable single-step execution
- Program memory(ROM) address breakpoint
  - Unlimited breakpoint can be set
  - Up to 255 countable breakpoint can be set for an instruction
  - Continuous breakpoint

- Timer/Counter function
  - Execution time measurement between program sequence ( Interval time between program steps )
  - Number of instruction fetch (program code size) counter
  - Number of instruction execution counter
- Real-time trace run
  - 16K depth of real-time trace memory records program flow from address trigger point.
- Program run history view
  - 16K depth of real-time run history can be viewed whenever program execution is halted
- OTP/MTP(Flash) Programming function
  - Read, Program, Blank check, Verify, Read protection, and Checksum available for all SAM8 OTP/MTP/FLASH family
  - Erase, LDC protection, and Hard Lock functions are available for MTP devices
  - Complete line of interchangeable adapter socket supports all package options (sold separately)
- All functions of emulation are possible in the sub-clock mode operation and **also Full flash MCU (debugging by full flash mode)**
- Programmable Clock frequency of Target MCU
  - User can change the clock frequency of the target MCU by software in Smart Studio or IAR-C debugger.
- RAM data breakpoint run
  - Read, Write, Read/Write condition
  - Continuous RAM data breakpoint run
- Real-time RAM(Register) display
  - Sampling rate: 100ms
  - Support IAR C- compiler/embedded Workbench IDE
- **IAR C-compiler support**
  - IAR embedded Workbench IDE
  - IAR SAM8 C-compiler

# SK-3200 In-circuit Emulator for ARM processor



The Smart Kit, SK-3200, is a JTAG-based debug system which is developed as low-cost solution of In-Circuit Emulator (ICE) for ARM7, ARM9, ARM10 families and Intel XScale Embedded processors. SK-3200 provides the software and hardware interface between a Joint Test Action Group (JTAG) IEEE Standard 1149. 1 port on the hardware using a small interface unit and a Windows using the ARM Remote Debug Interface (RDI) running on a workstation.

SK-3200 firmware can be upgraded by software without changing any hardware. Users can download the latest firmware from the website at any time.

## Features and Specifications

- Support wide range of ARM cores and Intel XScale
  - XScale (PXA210, PXA250, PXA255 ...)
  - ARM7 Family, ARM9 Family, ARM10 Family

ARM7TDMI	ARM9TDMI	ARM1020T*	Intel IXP425*
ARM710T*	ARM920T	ARM10200*	Intel PXA250*
ARM720T*	ARM940T	ARM1020E*	Intel PXA210*
ARM740T*	ARM922T	ARM10200E*	
ARM7TDMI-S*	ARM925T*	ARM1022E*	
ARM7TDI-S*	ARM9E-S*	ARM10220E*	
ARM7EJ-S*	ARM9EJ-S*		
	ARM926EJ-S*		

\* Under test and support

The supported devices(CPU) will be updated continuously. For further details of supporting CPU please visit our website. If the device which you find is not listed, please contact us and ask it to be supported.

- Support third party debuggers
  - ARM eXtended Debugger (AXD)
  - ARM Debugger for Windows (ADW)
  - IAR Workbench<sup>†</sup>
  - Linux GDB<sup>†</sup>
  - Green Hills MULTI<sup>†</sup>
  - EPI EDB<sup>†</sup>
  - GNU GDB<sup>†</sup>
- Easy connection via USB to host computer
  - Download speed : 130KB/s @ 20MHz JTAG Clock
  - Fast communication, rapid speed up to 12M
- Supported OS: Windows 98/Me/2000/Xp and Linux<sup>†</sup>

(<sup>†</sup>) Under development

- Easy and rapid firmware upgrade for new functions :
  - SK-3200 firmware can be upgraded by software
  - Users can download the updated firmware from the SEMINIX website ([www.seminix.com](http://www.seminix.com)) at any time.
- Software and hardware breakpoint and watch-point
- JTAG-based hardware interface
- Open debugger Interface
  - ARM standard RDI 1.5.1 interface
- High speed images downloading through USB
- Compatible ARM SDT / ADS debuggers
- Wide range of target voltage (1.8V to 5.0V)
- Target flash memory programming<sup>†</sup>
- Don't occupy any resources other than JTAG chain on the target
- Low-cost version for the embedded system development
- Portable In-circuit Emulator
  - Size (W x L x H) : 50 x 100 x 25 (mm)
  - Weight : 90 g

## Package

PART	EA
SK-3200 interface unit	1
USB cable	1
JTAG cable	1
SIA-3200 adaptor	1
Software CD	1

# GW-PRO2 Samsung OTP/MTP gang Programmer



*The Gang programmer, GW-PRO2, is a series of production quality 8-gang programmers for the Samsung OTP and MTP microcontrollers of SAM4 (S3P7xxx), SAM8 (S3P8xxx, S3P9xxx), Calm RISC (S3FBxxx, S3FKxxx) and ARM7 (S3F4xxx, S3F3xxx) family*

*The Gang programmer consists of a master unit (GW-PRO2) which connects to various programming adapter sockets for programming all of OTP or MTP devices with a different package. The GW-PRO2 programmer holds the data and parametric information to be copied new devices. Once the data resides inside the buffer memory of GW-PRO2, it will be stored securely and is protected from accidental modifications with its secured functions. Data in the GW-PRO2 can be changed by downloading from a PC or by reading a chip in the master socket.*

## Features & Specifications

- Program up to 8 devices at one time
- Very fast programming speed:  
Program speed is 2K byte(OTP mode) and 5K byte(MTP) steps per second including verification operation.
- Supports all Samsung serial type OTP and MTP devices of SAM4(S3P7xxx) and SAM8 (S3P8xxx, S3P9xxx), Calm RISC (S3FBxxx, S3FKxxx) and ARM7/9 (S3F4xxx series) families via different programming adapters.( Programming adapter sockets are sold separately )
- Supports MTP devices with 3.3V and 5.5V operating voltage
- Individual socket LEDs indicate blank or verification result
- 340(mm) x 230(mm) x 50(mm), 2.2Kg Weight
- Data to be programmed is stored inside the flash memory of the GW-PRO2 and remains intact during power down. This feature is useful to move it to the production site after downloading data from the host PC and setting up the operation mode in the design lab
- Maximum buffer memory is 1Mbyte (1024 Kbytes)
- Auto verification of devices and the buffer memory in the stand-alone mode
- Selectable program mode (Auto read protection, LDC protection, Hard lock)
- The total number of pass and failed device after programming is displayed and remains during power down
- Buzzer sounds after programming finished( On/Off selectable )
- Complies to manufactures' programming specifications





**SPW-uni is a high-speed single socket universal programmer for the Samsung MCU, NOR-Flash, NAND-Flash memory, and other companies' MCUs.**

**It can program one device at a time.**

#### **Device supported :**

- **Samsung OTP, MTP and FLASH**
- **Samsung and SST Nor-Flash.**
- **Other company's PROM memory devices (NAND, NOR Flash) and MCUs \***

## Features and Specifications

- Universal Single Programmer.
- Main Function
  - Program (Writing PC data to device)
  - Verify with PC data file
  - Device Checksum
  - File Checksum
  - Read protection (only available MCUs)
  - Blank check functions (only Samsung MCU)
  - Erase, Hard Lock, and LDC protection functions (only Samsung MTP)
  - Make Hex file (Read Device)
- Convenient USB connection to any IBM compatible PC or Notebook computer
- No required additional power source (operation by only USB power of PC)
- Hex File format
  - Should be chosen in accordance with the data format of the target MCU data file such as Binary, Intel Hex, and Samsung Hex format types.
    - Three kinds of data format for programming device
  - <Binary file, Intel standard hex file, Samsung hex file>
- The driver software is user friendly single-menu operation.
  - Driver software run under Windows 95/98/2000/XP/NT
  - User can easily select device type or configuration settings
- Very fast program and verify time
  - Samsung MCU: about 1 second per 2K(OTP) and 10K(MTP)byte
  - Nor Flash Memory: about 1 second per 60K byte
- Support Window 95/98/2000/XP/NT operating system
- Compact size for portable  
145(mm) x 102(mm) x 20(mm)

#### **Package**

PART	EA
SPW-uni unit	1
Samsung chip adapter	1
USB cable	1
User's Manual	1
SPW-uni installation CD	1

**\*Note : You can check new devices list at Seminix website and download the driver software for supporting the new devices.**

# AS-pro On-board programmer for Samsung Flash MCU



**AS-pro is a high-speed programmer for the Samsung MTP (Flash memory MCU) devices on boards and developed as small size for portability.**

**It can program a new firmware code into Samsung MTP (FLASH) MCU mounted on system PCB when you need to upgrade the system firmware code for after-sales service without a host PC.**

**So it is very useful to upgrade the firmware code of Samsung MCU built in the Air-conditioner, Refrigerator, Washing machine like a heavy goods which are difficult to move them to the repair (A/S) center.**

## Features & Specifications

- Portable & Stand alone Samsung OTP/MTP/FLASH MCU programmer.
- Small size and light for the portable use  
(W : 46, L : 82, D : 16 mm, Weight : 50g )
- Supports all Samsung OTP and MTP devices with Samsung standard serial protocol format
- Hex data file download via USB port from PC
- Very fast program and verify time  
- 2K(OTP) and 10K(MTP) bytes per second
- Internal large buffer memory : 118M Bytes  
- Can download several hex files and select one file when program it to MTP built in user system.
- Driver software run under Windows 95/98/2000NT/XT  
- User can easily select device type or configuration settings  
- Key-based menu-drive software for simple operation
- Support full functions of OTP and MTP programmer
  - Program (Writing data into device)
  - Verify with buffer data of AS-pro
  - Device checksum
  - Buffer data checksum
  - Erase (MTP devices only)
- Power supply (2 kinds)
  - (1) User system power operation mode:  
(AS-pro use Vdd from user system as operating power)
    - Operating Voltage : 5VDC
    - Power Consumption: 40mA (Standby)  
150mA (Operating)
  - (2) External power adapter
    - USB power adapter (5VDC)
- System upgradeable  
- AS-pro system firmware can be upgraded if need.

## Package

PART	EA
AS-pro Main Body	1
USB cable	1
20pin Connection cable	1
20 to 6 pin adapter(AB20P6)	1
USB power adapter (Option)	1
AS-pro Installation CD	1
User's Manual	1

# US-pro Portable Samsung OTP/MTP Programmer



*The US-pro is a high-speed single programmer for the Samsung OTP and MTP (Flash memory MCU) devices on board and was developed as very small size and light for portability. It can program one device at a time with Samsung standard serial protocol OTP or MTP connection with the USB interface of notebook PC. So it is useful for upgrading the application firmware of Samsung MCU devices.*

## Features & Specifications

- Portable programmer for Samsung OTP/MTP/Flash MCU
- Very small size and light for the portable use (W : 26, L : 74, D : 10 mm, Weight : 10g )
- Supports all Samsung OTP, MTP, and Flash MCU devices with Samsung standard serial protocol format
- Convenient USB connection to any IBM compatible PC or Notebook computer
- No required additional power source (Only can be operated by USB power of PC)
- PC-based menu-drive software for simple operation
- Very fast program and verify time --> 2K(OTP) and 10K(MTP) bytes per second
- Supports Samsung standard hex or Intel hex format
- Driver software run under Windows 95/98/2000/NT and XP
  - User can easily select device type or configuration settings
- Support full functions of OTP and MTP programmer
  - Read device
  - Program (writing data on PC into device)
  - Verify with the data file on PC
  - Read protection
  - Device checksum
  - File checksum
  - Blank check functions
  - Erase, LDC protection, Hard Lock (MTP devices only)
- Firmware upgrade
  - Very easy software upgrade for new function or fixing the firmware bugs of US-pro system
  - visit SEMINIX website [www.seminix.com](http://www.seminix.com) for upgrade

## Package

PART	EA
US-pro Main Body	1
US-pro Installation CD	1
Connection Cable	1
User's Manual	1